

An Advanced Light Weight Recuperator for Space Power Systems, Phase I

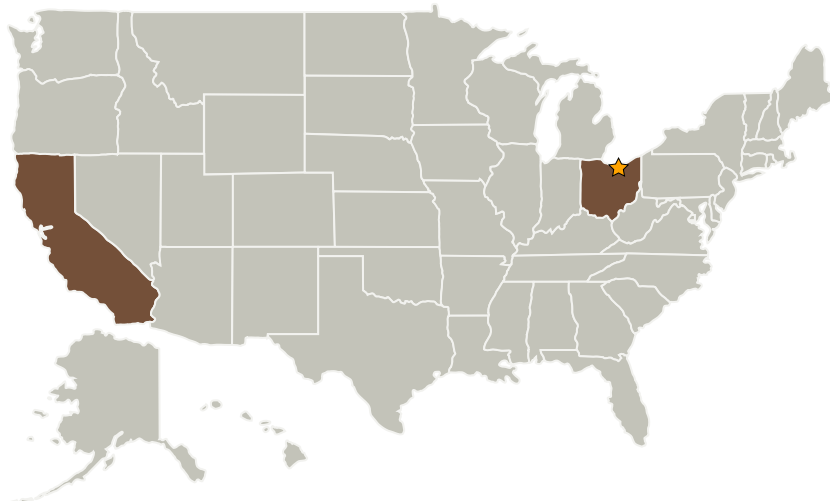
Completed Technology Project (2004 - 2004)



Project Introduction

Nuclear Electric Propulsion (NEP) technology holds great promise for power and propulsion demands of NASA current and future deep space explorations. Closed Brayton Cycle (CBC) space power system is one of the most efficient energy conversion technologies for nuclear electric propulsion. There are three heat exchanges in CBC and the recuperator is very important to enhancing CBC efficiency. An advanced light weight recuperator is proposed for reducing mass of the State-of-Art (SOA) metallic recuperator in CBC while improving its performance by using advanced materials. The feasibility of the proposed recuperator will be demonstrated and key technical issues will be investigated during Phase I. Three concept designs of heat exchanger cores will be developed and prototyped. Their performance will be determined. Based on experimental data, a sub-scale recuperator for CBC will be outlined preliminarily. The proposed recuperator is anticipated to offer significant mass saving in comparison with the metallic recuperator.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Allcomp Inc.	Supporting Organization	Industry Small Disadvantaged Business (SDB)	

Primary U.S. Work Locations

California	Ohio
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Mike Wang

Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
 - └ TX03.1 Power Generation and Energy Conversion
 - └ TX03.1.6 Other Advanced Concepts for Generating/Converting Power